SPECIFICATION AMENDMENTS

None

CLAIM AMENDMENTS

Claim Amendment Summary

Claims pending

- Before this Amendment: Claims 37-41 and 72-82.
- After this Amendment: Claims 37, 39-41, 72-74 and 76-82.

Non-Elected, Canceled, or Withdrawn claims: 38 and 75.

Amended claims: 37, 72, 74, 76 and 78-81.

New claims: None.

Claims:

37. (Currently Amended) A method comprising:

defining rules associated with semantic classes of a grammar;

receiving a query;

segmenting the query into segments;

mapping the query from a query space to a question space to identify associated frequently asked questions (FAQ), the mapping comprising:

generating a parsed output by parsing parsable segments of the query, wherein the selection of the parsed output is based on a coverage of one or more of the rules against the query, the coverage being determined based on probabilities learned from using data in a log database as training data, the probabilities comprising confidence values represented continually and associated with each item in the one or more of the rules, wherein the parsed output comprises one or more parsed concepts selected from a set of concepts, wherein the one or more parsed concepts comprise at least one of a parse tree and a partially parsed fragment;

analyzing ~~a~~ the log database to determine a relevance of previously stored frequently asked questions to the query, the ~~analyzing~~ determination of the relevance comprising:

processing the log database over time to provide relevance-feedback learning to facilitate a derivation of weighting factors that indicate how relevant each previously stored frequently asked question is to each of the set of concepts; and

using the derived weighting factors to calculate an associated correlation between each of the previously stored frequently asked questions and the one or more parsed concepts, whereby each associated correlation indicates how relevant each previously stored frequently asked question is to the query;

~~deriving confidence values associated with rules that indicate how reliably the rules relate the query to the list of frequently asked questions;~~

~~deriving confidence values associated with items in the rules that indicate how reliably the rules are matched to the query,~~

~~wherein the derivation of at least one of the confidence values associated with items in the rules is facilitated by iterative training of a neural network using data from the log database as training data,~~

~~wherein the neural network utilizes a non-linear activation function;~~

~~deriving confidence values based on how many words in the query match items in the rule;~~

~~assigning weights indicating how probable the query pertains to the frequently asked questions; and~~

~~assigning weights indicating how probable particular answers pertain to particular frequently asked questions,~~

~~wherein the weights are derived over time based on training facilitated by data in the log database,~~

~~wherein the confidence values and weights facilitate the determination of the relevance;~~ and

ascertaining from the previously stored frequently asked questions the associated frequently asked questions based on the determined relevance;

mapping the associated frequently asked questions from the question space to a template space to identify associated templates;

mapping the templates from the template space to an answer space to identify associated answers; and

returning and storing the answers in response to the query.

38. (Canceled)

39. (Previously Presented) The method as recited in claim 37, wherein the mapping from the question space to the template space comprises cross-indexing from a first table containing question identifications to a second table containing template identifications.

40. (Previously Presented) The method as recited in claim 39, wherein the mapping from the template space to the answer space comprises cross-indexing from the second table to a third table containing answer identifications.

41. (Previously Presented) The method as recited in claim 37, further comprising:

presenting the answers to a user for confirmation as to which of the answers represent the user's intentions in the query;

analyzing the query and the answers confirmed by the user; and

modifying the answers that are returned in response to the query based on information gleaned from the analyzing.

72. (Currently Amended) A computer implemented method of parsing a search query, the method comprising:

segmenting the search query into individual character strings, wherein at least one of the individual character strings comprises a single character;

producing one or more outputs from the individual character strings, the one or more outputs selected from a group consisting of:

a parse tree produced from at least one parsable character string of the search query;

a partially-parsed fragment produced from one or more partially parsable character strings of the search query,

wherein a produced parse tree and a produced partially-parsed fragment represent a collection of concepts, the collection of concepts selected based on coverage of one or more semantic class rules against the search query, the coverage determined based on learned confidence values associated with each item in the one or more of the semantic class

rules, the confidence values learned by using data in a log database as training data; and

at least one keyword generated based at least on one non-parsable character string of the search query~~, wherein;~~

determining a relevance ~~for each output that comprises a parse tree or a partially-parsed fragment, a relevance of the output to a~~ of a list of frequently asked questions (FAQ) to the search query ~~is determined~~, the determination of the relevance comprising:

~~deriving confidence values associated with rules and with items in the rules that indicate how reliably the rules are matched to the output;~~

~~wherein the derivation of at least one of the confidence values is facilitated by using data from the log database as training data; and~~

~~assigning weights indicating how the output, the list of frequently asked questions and answers pertain to each other;~~

~~wherein the confidence values and weights facilitate the determination of the relevance;~~

~~wherein the one or more output are used to return answers to the search query~~

processing a log database to derive weighting factors that indicate how relevant each previously stored frequently asked question is to each of the set of concepts; and

using the derived weighting factors to calculate an associated correlation between each of the previously stored frequently asked questions and the collection of concepts, whereby each associated

correlation indicates how relevant each previously stored frequently asked question is to the search query;

identifying the most relevant of the previously stored frequently asked questions; and

presenting at least one of one or more answers to a user in a user interface associated with the identified most relevant of the previously stored frequently asked questions.

73. (Previously Presented) The method of claim 72, further comprising:

conducting keyword searching using the at least one keyword.

74. (Currently Amended) The method of claim 72, wherein the ~~parse tree represents a~~ collection of concepts are related to the search query.

75. (Canceled)

76. (Currently Amended) The method of claim [[75]] 72, further comprising:

identifying at least one answer associated with the list of frequently asked questions that match the parsed concepts and keywords; and

presenting the at least one answer to [[a]] the user in [[a]] the user interface that permits [[a]] the user to select a desired answer from the one or more answers.

77. (Previously Presented) The method of claim 76, further comprising:

logging the search query and at least one answer selected by the user in a log database; and

analyzing the log database to derive at least one weighting factor indicating how relevant the frequently asked questions are to the parsed concepts and keywords.

78. (Currently Amended) A system comprising:

a processor; ~~and~~

~~one or more~~ a memory ~~memories, wherein the one or more memories have stored thereon computer executable modules, the computer executable modules comprising:~~;

~~a parser for a search engine comprising:~~

a segmentation module stored in the memory and executed by the processor that segments a search query into one or more individual character strings;

a natural language parser module stored in the memory and executed by the processor that produces a parsed result comprising a parse tree from one or more parsable character strings of the search query, the parse tree representing a collection of concepts selected from a set of concepts; and

a keyword ~~parser~~ searcher module stored in the memory and executed by the processor to identify one or more keywords in the search query and to output the one or more keywords; and

a log analyzer module stored in the memory and executed by the processor that utilizes data in a log database to ~~derive, over time, various probabilities comprising~~:

adapt how the natural language parser module selects the parsed result based on learned confidence values associated with coverage of semantic rules against the search query, wherein the confidence values are learned utilizing the data in the log database as training data;

derive weighting factors that indicate a degree of correlation between each of a list of frequently asked questions and each of the set of concepts; and

use the derived weighting factors to determine a relevance between each of the list of frequently asked questions and the associated collection of concepts; and

~~confidence values associated with rules that indicate how reliably the rules relate the parse tree to a list of frequently asked questions;~~

~~confidence values associated with items in the rules that indicate how reliably the rules are matched to the parse tree,~~

~~wherein the derivation of at least one of the confidence values associated with items in the rules is facilitated by training using data from the log database as training data; and~~

~~weights indicating how relevant the parse tree and the one or more keywords are to the list of frequently asked questions,~~

~~wherein the parse tree, the confidence values, the weights and the one or more keywords are used to return answers to the search query~~

a question matcher module stored in the memory and executed by the processor to identify the most relevant frequently asked questions based on the determined relevance and present at least one of one or more answers to a user in a user interface that best match the most relevant frequently asked questions.

79. (Currently Amended) The system of claim 78, wherein the ~~parse tree represents a~~ collection of concepts are related to the search query.

80. (Currently Amended) The system of claim 78, further comprising a search module that matches the parsed concepts to [[a]] the list of frequently asked questions.

81. (Currently Amended) The system of claim 80, wherein the search module:

identifies at least one answer associated with the list of frequently asked questions that match the parsed concepts and keywords; and

presents the at least one answer to [[a]] the user in [[a]] the user interface that permits [[a]] the user to select a desired answer from the one or more answers.

82. (Previously Presented) The system of claim 81, wherein the search module:

logs the search query and at least one answer selected by the user in the log database; and

analyzes the log database to derive at least one weighting factor indicating how relevant the frequently asked questions are to the parsed concepts and keywords.